

Drag Reduction and Flight Control Using Off-Body Energy Deposition

Completed Technology Project (2015 - 2018)



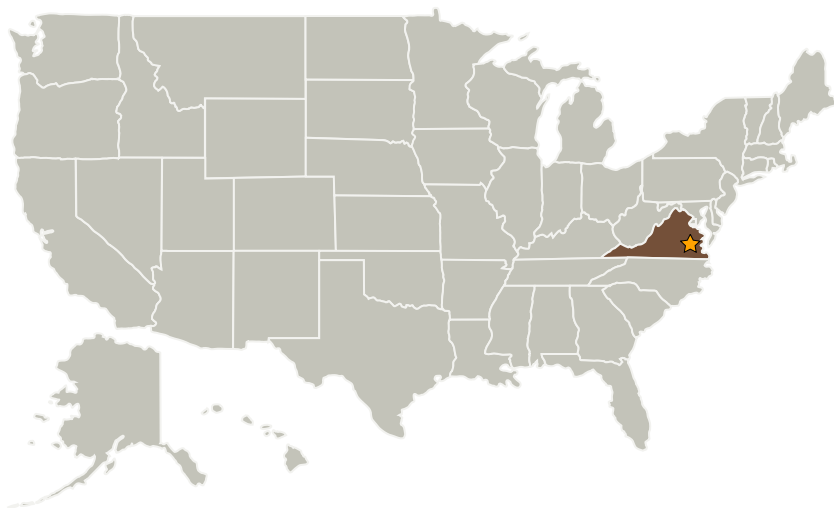
Project Introduction

What are the key technical challenges? Implementation of non-equilibrium thermochemistry; Accurate energy balance; Dynamic impulse measurements at Mach 2) What is your approach/research plan? Combined CFD/Experimental investigation; Bench laser deposition data (incident, transmitted power, blast wave expansion rate); Impulse for single energy pulses using model spring-mass system dynamic response. What are the innovative aspects (how is this different than what others are doing in industry, academia government)? Non-equilibrium thermochemistry rather than ideal gas; Full energy accounting for laser energy deposition; Wind tunnel model impulse drag measurements rather than steady state (reduces laser/experimental costs/ and risks)

Anticipated Benefits

Benefit to ARMD mission challenges

Primary U.S. Work Locations and Key Partners



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Organizations Performing Work	Role	Type	Location
★ Langley Research Center (LaRC)	Lead Organization	NASA Center	Hampton, Virginia
Rutgers University-New Brunswick	Supporting Organization	Academia Asian American Native American Pacific Islander (AANAPISI), Hispanic Serving Institutions (HSI)	New Brunswick, New Jersey

Primary U.S. Work Locations

Virginia

Project Website:

https://www.nasa.gov/directorates/spacetech/innovation_fund/index.html#.VC

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Langley Research Center (LaRC)

Responsible Program:

Center Innovation Fund: LaRC CIF

Project Management

Program Director:

Michael R Lapointe

Program Manager:

Julie A Williams-byrd

Principal Investigator:

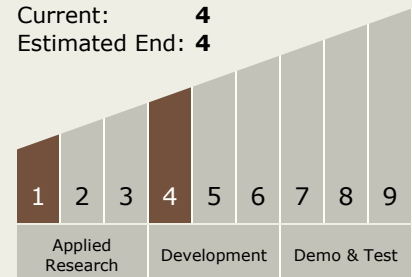
Stephen P Wilkinson

Technology Maturity (TRL)

Start: 1

Current: 4

Estimated End: 4



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Technology Areas

Primary:

- TX06 Human Health, Life Support, and Habitation Systems
 - └ TX06.5 Radiation
 - └ TX06.5.5 Monitoring Technology

Target Destination

Earth